

# MONTHLY WEATHER REVIEW.

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## INTRODUCTION.

The MONTHLY WEATHER REVIEW for December, 1904, is based on data from about 3300 stations, classified as follows:

Weather Bureau stations, regular, telegraph, and mail, 167; West Indian Service, cable and mail, 4; River and Flood Service, regular 43, special river and rainfall, 190, special rainfall only, 56; voluntary observers, domestic and foreign, 2565; total Weather Bureau Service, 3025; Canadian Meteorological Service, by telegraph and mail, 20, by mail only, 13; Meteorological Service of the Azores, by cable, 2; Meteorological Office, London, by cable, 8; Mexican Telegraph Company, by cable, 3; Army Post Hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Meteorological Service, 75; Jamaica Weather Service, 130; Costa Rican Meteorological Service, 25; The New Panama Canal Company, 5; Central Meteorological Observatory of Mexico, 20 station summaries, also printed daily bulletins and charts, based on simultaneous observations at about 40 stations; Mexican Federal Telegraph Service, printed daily charts, based on about 30 stations.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. R. C. Lydecker, Territorial Meteorologist, Honolulu, Hawaii; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander H. M. Hodges, Hydrographer, United States Navy; H. Pit-

tier, Director of the Physico-Geographic Institute, San José, Costa Rica; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Secretary, Meteorological Office, London; Rev. José Algué, S. J., Director, Philippine Weather Service; and H. H. Cousins, Chemist, in charge of the Jamaica Weather Office; Señor Enrique A. Del Monte, Director of the Meteorological Service of the Republic of Cuba.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is  $157^{\circ} 30'$ , or  $10^{\text{h}} 30^{\text{m}}$  west of Greenwich. The Costa Rican standard meridian is that of San José,  $5^{\text{h}} 36^{\text{m}}$  west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

## FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

During the first half of the month pressure was low over the western part of the North Atlantic, except from the 3d to the 5th, when an area of high pressure covered the eastern half of the United States and extended over Bermuda. During the latter half of the month pressure was generally high over the ocean between Bermuda and the south Atlantic coast of the United States, but low over New Foundland, Nova Scotia, and the north Atlantic coast. Over the Azores during the first half of the month the pressure was high, except from the 4th to the 8th, when an area of low pressure was apparently passing to the north of the islands. High winds were reported during this period, a velocity of 60 miles per hour from the southwest being recorded at Horta on the 6th. During the latter half of the month low pressure prevailed, the lowest barometric reading at Horta being 29.60 inches on the 28th, on which date a wind velocity of 64 miles per hour from the south was recorded. The month closed with the re-establishment of high pressure over the Azores. Over south-eastern Europe pressure was generally high, except on the 10th and from the 23d to the 26th. Over the British Isles low pressure prevailed throughout the month, except on the 18th, from the 24th to 28th, and on the 31st, when pressure was relatively high. The storm of the 12th was quite severe, and high winds and gales were reported from many coast stations. The most severe storm of the month occurred at its close. On the 29th and 30th high winds and gales did considerable damage to shipping along the coasts, and to tele-

graph lines in all parts of the United Kingdom. This storm apparently passed on over the Baltic Sea, and shipping and property in the coast towns of Germany sustained considerable loss.

The areas of low pressure that traversed the United States during the month were more numerous and took a course somewhat more southerly than usual. With a single exception these storms presented no features of particular interest. Four storms passed up the Atlantic coast during the month causing high winds and rain and snow in the coast States. A number of schooners was driven ashore, but no very great loss was sustained. On the Pacific coast the month was unusually free from storms, four only, making their appearance on the Washington and Oregon coast. The most severe of these reached the coast on the morning of the 29th and occasioned some damage to wharfs and shipping along the Washington, Oregon, and northern California coast. On the Great Lakes navigation closed December 15, and storm warnings were discontinued for the season on that date. The two storms that occurred before that time were not remarkable. During the latter half of the month, storms were more numerous, but, with one exception, did little damage. The only remarkable storm of the month traversed the country from the 24th to the 28th and reached its maximum intensity during the 27-28th, in the Lake region. Barometric readings below 29.00 inches were recorded at several Lake stations, and considerable damage was sustained from the high winds and heavy snow that